

## **REMARKS/ARGUMENTS**

This is intended as a full and complete response to the Office Action dated September 21, 2009, having a shortened statutory period for response set to expire on December 21, 2009. Please reconsider the claims pending in the application for reasons discussed below.

Claims 1-23 and 63 are pending in the application and remain pending following entry of this response. Applicants submit that the amendments do not introduce new matter.

Further, Applicants are not conceding in this application that those amended (or cancelled) claims are not patentable over the art cited by the Examiner, as the present claim amendments and cancellations are only for facilitating expeditious prosecution of the claimed subject matter. Applicants respectfully reserve the right to pursue these (pre-amended or cancelled claims) and other claims in one or more continuations and/or divisional patent applications.

### Provisional Double Patenting

Claims 1-23 and 63 are provisionally rejected under 35 U.S.C. § 101 as claiming the same invention as that of Application No. 10/794,918.

As stated in response to the previous Office Action, Applicants request this rejection be held in abeyance as no claims have yet issued.

### Claim Rejections - 35 U.S.C. § 103

Claims 1-3, 5, 14-15, 19-20 and 63 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over *Trikkonen et al.* (U.S. Publication 2004/0002364, hereinafter, “*Trikkonen*”) in view of *Onggosanusi et al.* (U.S. Publication 2002/0114269, hereinafter, “*Onggosanusi*”). Applicants respectfully traverse these rejections.

The Examiner bears the initial burden of establishing a *prima facie* case of obviousness. See MPEP § 2141. Establishing a *prima facie* case of obviousness begins with first resolving the factual inquiries of *Graham v. John Deere Co.*, 383 U.S. 1 (1966). The factual inquiries are as follows:

- (A) determining the scope and content of the prior art;

- (B) ascertaining the differences between the claimed invention and the prior art;
- (C) resolving the level of ordinary skill in the art; and
- (D) considering any objective indicia of nonobviousness.

Once the *Graham* factual inquiries are resolved, the Examiner must determine whether the claimed invention would have been obvious to one of ordinary skill in the art.

In this case, Applicants respectfully submit the Examiner has not properly characterized the teachings of the references and, as a result, has failed to ascertain differences between the claimed invention and the prior art.

For example, as stated in response to the previous Office Action (dated September 21) and despite the Examiner's contention, *Trikkonen* fails to teach "demultiplexing pilot symbols and the block of data symbols onto a plurality of subbands to obtain, for the data packet, a plurality of sequences of pilot and data symbols for the plurality of subbands" as recited in claim 1. In contrast, *Trikkonen* teaches, in paragraph [0059] that:

... The training or pilot signal is sent independently of the data stream and is used by the receiver to provide an estimated value for the channel transfer model.

Clearly, there is no teaching of obtaining "for the data packet, a plurality of sequences of pilot and data symbols for the plurality of subbands."

In responding to Applicants' previously submitted arguments, the Examiner states that "*Trikkonen* teaches that pilot and data symbols are sent and received over a plurality of antennas on channels... It is also taught that the pilot signals are used to aid in receiving each of the channels on the multiple antennas." Applicants respectfully submit, however, that even if this is what *Trikkonen* teaches, that is not the same as the claim 1 feature of "demultiplexing pilot symbols and the block of data symbols onto a plurality of subbands to obtain, for the data packet, a plurality of sequences of pilot and data symbols for the plurality of subbands."

The Examiner concedes that *Trikkonen* fails to teach that the "the spatial processing" recited in claim 1 "is performed for each subband." However, the Examiner relies on paragraphs [0041]-[0043] of *Onggosanusi* as teaching this element. As stated in response to the previous Office Action, Applicants respectfully submit that there is no teaching in these cited paragraphs that spatial processing is performed "on at least one of the pilot and data symbols for each

subband with at least one steering vector selected for the subband.”

To emphasize, the claim recites that spatial processing is performed with a steering vector selected for each subband. There is no such teaching in *Onggosanusi*.

In responding to Applicants' previously submitted arguments, the Examiner states that "Essentially, *Onggosanusi* is describing that a multi-antenna framework transmits data across multiple sub-channels (subbands) using selected beamformer vector values." Again, Applicants respectfully submit, however, that *Onggosanusi* fails to teach spatial processing is performed "on at least one of the pilot and data symbols for each subband with at least one steering vector selected for the subband" as recited in claim 1.

Each of independent claims 14, 19 and 63 includes features substantially similar to those of claim 1, and are therefore also allowable over the art of record for at least the reasons given above. Accordingly, Applicants submit claims 1, 14, 19, and 63, as well as their dependents are allowable over the art of record and request withdrawal of this rejection.

Claims 5, 16 and 21 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over *Trikkonen* in view of *Onggosanusi*, and further in view of *Kim* (U.S. Patent No. 6,937,189). Claim 7 is rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over *Trikkonen* in view of *Onggosanusi*, and further in view of *Ketchum et al.* (U.S. Publication 2003/0108117, hereinafter, “*Ketchum*”). Claims 17 and 22 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over *Trikkonen* in view of *Onggosanusi* and *Kim*, and further in view of *Ketchum*. Claim 4 is rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over *Trikkonen* in view of *Onggosanusi*, and further in view of *Honig* (U.S. Patent No. 6,956,897). Claims 6, 10 and 12 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over *Trikkonen* in view of *Onggosanusi*, and further in view of *Walton et al.* (U.S. Publication 2003/0235147, hereinafter, “*Walton*”). Claim 8 is rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over *Trikkonen* in view of *Onggosanusi*, and further in view of *Jasper et al.* (U.S. Patent No. 6,441,786, hereinafter, “*Jasper*”). Claim 9 is rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over *Trikkonen* in view of *Onggosanusi*, and further in view of *Shattil* (U.S. Publication 2004/0086027). Claim 11 is rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over *Trikkonen* in view of *Onggosanusi* and *Walton*, and further in view of *Hudson et al.* (U.S. Patent No. 6,477,161). Claims 13, 18 and 23 are

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rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over *Trikkonen* in view of *Onggosanusi*, and further in view of *Lewis* (U.S. Publication 2004/0102157).

Each of these claims ultimately depends from one of independent claims 1, 14 or 19. Further, none of the above cited references overcomes the shortcomings in the teachings of *Trikkonen* and *Onggosanusi* discussed above.

Accordingly, Applicants submit these claims are also allowable over the art of record and respectfully request withdrawal of this rejection.

## CONCLUSION

Therefore, for at least the reasons presented above with respect to all of the pending claims subsequent to entry of this response, Applicants assert that all claims are patentably distinct from all of the art of record. All objections and rejections having been addressed, it is respectfully submitted that this application is in condition for allowance and a Notice to that effect is earnestly solicited. If any points remain in issue that the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

**Charge Statement:** For this application, the Commissioner is hereby authorized to charge any required fees or credit any overpayment to Deposit Account 17-0026.

Respectfully submitted,  
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